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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/785,238	OTANI ET AL.	
	Examiner	Art Unit	
	Michael C. Colucci	2609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-27 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-27 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 2/1/07, 3/23/04, 3/17/04.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

Claim Rejections - 35 USC § 102

1. **The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:**

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Borth et al, US 4630304, (herein after Borth '304).**

Re claim 1, "voice activity detector", **Borth '304** teaches the detection of the signal to noise ratio SNR of a signal where voice or noise is detected within the present signal, (Col. 5 line 50-64).

"frequency spectrum calculator", **Borth '304** teaches the FFT of the noisy speech signal into the frequency domain, (Col. 3 line 36-52).

"flatness evaluator", **Borth '304** teaches an energy valley detector where energy minima are implemented to find the noise estimation.

"voice/noise discriminator", **Borth '304** teaches the detection of the signal to noise ratio SNR of a signal where voice or noise is detected within the present signal, (Col. 5 line 50-64). "Comparing the flatness factor" with a "predetermined threshold", **Borth '304** teaches signal energy from the valley detector being compared to a predetermined threshold, (Col. 2 line 55-68).

Re claim 2, "plurality of bandpass filters" that "divide the given signal frame" into individual frequency components to "calculate power", **Borth '304** teaches a Fourier

transform approach where contiguous bandpass filters are used to find the power spectral density on a per channel basis, (Col. 4 line 10-26). **Borth '304** also teaches the segmentation of digital data by the use of a windowing operation where a segment is construed as a frame, (Col. 3 line 36-52).

Claim 20 has been analyzed and rejected with respect to claim 1. Claim 20 teaches the method of the apparatus of claim 1.

Claim 21 has been analyzed and rejected with respect to claim 2. Claim 21 teaches the method of the apparatus of claim 2.

3. **Claims 16-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Borth et al, US 4630305, (herein after Borth '305).**

Re claim 16, "noise canceller that suppresses noise", **Borth '305** teaches a noise suppression system, (**Borth '305** Col. 4 line 14-29).

"noise period detector", **Borth '305** teaches a noise suppression system, (**Borth '305** Col. 4 line 14-29). It is inherent that noise be detected in order to be canceled.

"plurality of bandpass filters" that divide the input signal into a "plurality of frequency components", **Borth '305** teaches the entire spectrum of a signal divided by a bank of bandpass filters and particular spectral bands, (Col. 3 line 23-39).

"frequency spectrum calculator", **Borth '305** teaches of converting a noisy signal into the frequency domain through the use of the FFT, (**Borth '305** Col. 4 line 14-54)..

"by processing the frequency components supplied from said bandpass filters", **Borth '305** teaches the use of windows to segment digital data, (**Borth '305** Col. 4 line 14-54).

"flatness evaluator", **Borth '305** teaches an energy valley detector that produces energy estimates and is updated to control the gain of the system, (**Borth '305** Col. 8 line 9-19). Knowing the flatness of a signal determines how to adjust the gain.

"voice/noise discriminator", **Borth '305** teaches en energy valley detector that makes the decision whether a signal is speech or noise, (**Borth '305** Col. 8 line 19-36). "comparing the flatness factor with a predetermined threshold", **Borth '305** teaches the comparison of the energy estimate from the detector and a noise threshold, (**Borth '305** Col. 8 line 19-36). "sets a talkspurt flag" or a "noise flag", **Borth '305** teaches a control signal that is generated if energy breaches a threshold, where there is indication of whether a voice is present or not, (**Borth '305** Col. 8 line 19-36).

"suppression ratio calculator" that "estimates noise power", when read in light of the specification, the ratio calculator compares the current frame power spectrum with the noise power spectrum. **Borth '305** teaches of an estimate where the background noise power spectrum is subtracted from the speech plus noise power spectrum which leaves the clean signal, (Col. 4 line 30-54).

"noise suppressor", **Borth '305** teaches of spectral subtraction noise suppression (**Borth '305** Col. 4 line 14-29). **Borth '305** also teaches of an estimate where the background noise power spectrum is subtracted from the speech plus noise power spectrum which leaves the clean signal, (Col. 4 line 30-54).

Claim 17 has been analyzed and rejected with respect to claim 16. Claim 17 teaches the same limitations set forth by claim 16. **Borth '305** teaches the use of windows being similar to that of analog spectrum analysis, (Col. 4 line 14-29).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in **Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966)**, that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows: **(See MPEP Ch. 2141)**

a. Determining the scope and contents of the prior art;
b. Ascertaining the differences between the prior art and the claims in issue;
c. Resolving the level of ordinary skill in the pertinent art; and
d. Evaluating evidence of secondary considerations for indicating obviousness or nonobviousness.

5. Claim 3, 9, 22, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Borth et al, US 4630304, (herein after Borth '304) in view of Gao, US 6862567.

Re claim 3, "calculates an average of spectral components", Borth '304 teaches a voice activity detector and flatness evaluator (Col. 5 line 50-64), but fails to teach of a summation of differences between spectral and average components. Gao teaches an average long-term power spectral estimate (Gao Col. 3 line 25-35). The further

limitations of "Adds up difference between the spectral components and the average thereof", Gao teaches the sum of the difference between the current frame power spectrum and average long-term power spectral estimate (Gao Col. 3 line 25-35). Therefore, the combined teaching of Borth '304 and Gao as a whole would have rendered obvious a flatness factor found through the summation of differences between spectral components and average components.

Re claim 9, "flatness evaluator" that "adds up the differences between adjacent components", Borth '304 teaches a voice activity detector and flatness evaluator (Col. 5 line 50-64), but fails to teach of a summation of differences between adjacent spectral components. Gao teaches an average long-term power spectral estimate at location (m) and at the subsequent frame at location (m +1), (Gao, Col. 3 line 25-35). Therefore, the combined teaching of Borth '304 and Gao would have rendered obvious a flatness factor found through the sum of differences of adjacent spectral components.

Claim 22 has been analyzed and rejected with respect to claim 3. Claim 22 teaches the method of the apparatus of claim 3.

Claim 24 has been analyzed and rejected with respect to claim 3. Claim 24 teaches the method of the apparatus of claim 3.

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Borth et al, US 4630304, (herein after Borth '304) in view of Benyassine, US 5774849, (herein after Beny).

Re claim 4, “calculates an average of spectral components”, Borth ‘304 teaches a voice activity detector and flatness evaluator (Col. 5 line 50-64), but fails to teach a summation of squares of differences between spectral and average components. Beny teaches running averages of the background noise, (Beny Col. 5 line 17-30). Furthermore, “adds up squared differences”, Beny teaches the sum of squares of the difference between the current frame and the running averages of the background noise, (Beny Col. 5 line 17-30). Therefore, the combined teaching of Borth ‘304 and Beny would have rendered obvious a flatness factor found through the summation of the square of the differences between spectral components and average spectral components.

7. Claims 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Borth et al, US 4630304, (herein after Borth ‘304) in view of Jain, US 5189701.

Re claim 5, “calculates an average of spectral components”, Borth ‘304 teaches a voice activity detector and flatness evaluator (Col. 5 line 50-64), but fails to teach a maximum difference between spectral and average components. Borth ‘304 also teaches the time-averaged value of background noise estimates, (Col. 14 line 19-29). However Borth ‘304 fails to teach a maximum difference between spectral components and average components. However, Jain does. For instant, the limitation “Maximum difference”, Jain teaches the largest difference between peak amplitude and the following trough of voice signals, (Jain Col. 4 line 48-58). Jain teaches peak amplitudes of the frequency spectrum and the determination of the difference between the peak

amplitudes, (Jain Col. 4 line 48-58). Therefore, the combined teaching of Borth '304 and Jain would have rendered obvious a flatness factor found through the maximum difference between spectral components and average spectral components.

Re claim 10, "flatness evaluator", Borth '304 teaches a voice activity detector and flatness evaluator, (Col. 5 line 50-64). However Borth '304 fails to teach a maximum difference between adjacent spectral components. However, Jain does. For instant, the limitation "Maximum difference" of adjacent spectral components", Jain teaches peak amplitudes of the frequency spectrum and the determination of the difference between the peak amplitudes, (Jain Col. 4 line 48-58). Jain also teaches the largest difference between peak amplitude and the following trough, (Jain Col. 4 line 48-58). Therefore, the combined teaching of Borth '304 and Jain would have rendered obvious a flatness factor found through the maximum difference between adjacent spectral components.

8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Borth et al, US 4630304, (herein after Borth '304) in view of Tsutsui, US RE36683.

Re claim 6, "flatness evaluator", Borth '304 teaches a voice activity detector and flatness evaluator, (Col. 5 line 50-64). However Borth '304 fails to teach of finding a maximum value and the sum of differences between spectral components and the maximum value. Tsutsui teaches a maximum useable band where bits are allocated for coding of frequency coefficients, (Tsutsui, Col. 5 line 5-14). Further, "adds up differences between spectral components and the maximum value", Tsutsui teaches the

quantization of spectral coefficients where the number of bits is equivalent to a sum of the first and second differences, (Tsutsui, Col. 38 line 41-53). Therefore, the combined teaching of Borth '304 and Tsutsui would have rendered obvious a flatness factor found by summing the differences of the spectral components and maximum value of the frequency spectrum.

9. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Borth et al, US 4630304, (herein after Borth '304) in view of Lin et al, US 5666466, (herein after Lin).

Re claim 7, "flatness evaluator", Borth '304 teaches a voice activity detector and flatness evaluator, (Col. 5 line 50-64). However Borth '304 fails to teach of finding a maximum value and the sum of the square of the differences between spectral components and the maximum value. Lin teaches a maximum frequency in a spectral speech frame, (Lin Col. 8 line 29-47). Further, "Adds up squared differences between spectral coefficients and the maximum thereof", Lin teaches the sum of the squares of the differences of cepstrum coefficients and vectors, (Lin Col. 4 line 50-62). Therefore, the combined teaching of Borth '304 and Lin would have rendered obvious a flatness factor found by summing the squares of the differences between spectral components and the maximum value of a frequency.

10. Claims 8 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Borth et al, US 4630304, (herein after Borth '304) in view of Reina, US 6999520.

Re claim 8, "flatness evaluator", Borth '304 teaches a voice activity detector and flatness evaluator, (Col. 5 line 50-64). Borth '304 fails to teach of a maximum value and the difference of spectral components and the maximum value. Reina teaches a maximum value of a REVERB signal, (Reina Col. 5 line 4-30). Further, "maximum difference between spectral components and the maximum value", Reina teaches the maximum difference in bit usage amongst various input signals. Therefore, the combined teaching of Borth '304 and Reina would have rendered obvious a flatness factor found by finding the maximum difference of spectral components and the maximum value.

Claim 23 has been analyzed and rejected with respect to claim 8. Claim 23 teaches the method of the apparatus of claim 8.

11. Claims 11, 12, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Borth et al, US 4630304, (herein after Borth '304) in view of O'Hagan et al, US 5581658, (herein after O'Hagan).

Re claim 12, "flatness evaluator", Borth '304 teaches a voice activity detector and flatness evaluator, (Col. 5 line 50-64). Borth '304 fails to teach the limitation "calculates average power of the given signal frame" and "normalizes the flatness factor by dividing by the calculated average". O'Hagan teaches a normalizer that creates a signal for

each frequency bin where the latest spectral power level is divided by the smoothed or average spectral power level, (O'Hagan Col. 7 line 18-31). O'Hagan teaches the use of bins which will be construed as frames. Therefore, the combined teaching of Borth '304 and O'Hagan would have rendered obvious a normalized flatness factor found by dividing by the average.

Claims 11 and 25 have been analyzed and rejected with respect to claim 12. Claim 11 includes all the limitations taught by claim 12. Claim 25 recite the method of the apparatus of claim 11.

12. Claims 13, 14, 26, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Borth et al, US 4630304, (herein after Borth '304) in view of Sugar et al, US PGPUB 20030198304, (herein after Sugar).

Re claim 13, "calculates an average of spectral components", Borth '304 teaches a voice activity detector and flatness evaluator, (Col. 5 line 50-64). Borth '304 also teaches the time-averaged value of background noise estimates, (Borth Col. 14 line 19-29). However, the limitation "counts the number of spectral components that exceed the threshold", where the threshold is determined from the average, Borth '304 fails to teach this limitation. Sugar teaches a power threshold where a count is obtained of how many times that the power at each frequency bin exceeds the power threshold, (Sugar [0231]). Therefore, the combined teaching of Borth '304 and Sugar would have rendered obvious a flatness evaluator that counts the number of spectral components

that exceed an average dependant threshold, that ultimately determines a flatness factor.

Re claim 14, "flatness evaluator", Borth '304 teaches a voice activity detector and flatness evaluator, (Col. 5 line 50-64). However, the limitation "Maximum value" that determines a "threshold", Borth '304 fails to teach this limitation. Sugar teaches a power threshold where a count is obtained of how many times that the power at each frequency bin exceeds the power threshold, (Sugar [0231]). Sugar also teaches tracking the maximum power in each frequency bin, (Sugar [0231]). Therefore, the combined teaching of Borth '304 and Sugar would have rendered obvious a flatness evaluator that counts the number of spectral components that exceed a maximum value dependant threshold, that ultimately determines a flatness factor.

Claim 26 has been analyzed and rejected with respect to claim 14. Claim 26 teaches the method of the apparatus of claim 14.

Claim 27 has been analyzed and rejected with respect to claim 14. Claim 27 teaches the method of the apparatus of claim 14.

13. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li, US US 20020188445 A1 in view of Borth et al, US 4630304, (herein after Borth '304).

Re claim 15, "voice operated transmitter", Li teaches a communications link that transmits and encodes a signal or discontinues the transmission of the signal dependant upon whether a voice is detected, (Li [0005]).

"frequency spectrum calculator", Li teaches an input signal and detection of a voice, (Li [0005]). However Li fails to teach of frequency spectrum calculation. Borth '304 teaches the power spectrum of a noisy signal being calculated, (Col. 3 line 36-52). Therefore, the combined teaching of Li and Borth '304 would have rendered obvious the calculation of the frequency spectrum of an input signal.

Further, the limitation "flatness evaluator", Li teaches parametric characteristics in the frequency spectrum and the zero cross rate where running averages of the background noise and the detected signal in a current frame are found. By calculating a running average in the frequency spectrum, one acquires how flat a signal is, (Li [0007]). The limitation "voice/noise discriminator", Li teaches a module that determines whether a signal is noise or a voice, (Li [0005]). "frequency spectrum with a predetermined threshold", Li teaches two thresholds that are used to maintain the distinction between noise and voice energies, (Li [0040]). "talkspurt flag" and a "noise flag" are taught by Li, where if the VAD (voice activity detector) detects a voice, encoding of the signal takes place, if not a discontinuous transmission takes place, (Li [0005]). The limitation "encoder", Li teaches a G.729 encoder to encode the digital representation of a voice signal, (Li [0005]). Further, the limitation "transmitter that transmits" the "coded data stream", Li teaches a communications link capable of transmitting the digital representation of the detected voice signal, (Li [0005]). "transmits only the noise flag when the noise flag is set", Li teaches the transmission of a discontinuous signal in the form of the detected background noise, (Li [0005]). A flag

is broad and is construed as data that triggers another response in a system to occur such as voice detection being true or false.

14. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li, US 20020188445 A1 in view of Gilbert et al, US 5920834, (herein after Gilbert).

Re claim 18, "tone detector", Li teaches the same limitations set forth by claim 18 implemented with a tone detector rather than a voice operated transmitter. Li fails to teach a tone detector. Gilbert teaches a tone detector that checks the transmission signal for DTMF tones, (Gilbert Col. 3 line 60 – Col. 4 line 4). Also a tone is broad and is construed as a type of voice quality implying that detection of a tone means detection of a voice. Therefore, the combined teaching of Li and Gilbert would have rendered obvious a tone detector that detects a tone signal in an input signal.

"frequency spectrum calculator", Li teaches an input signal and detection of a voice, (Li [0005]). Li also teaches the analysis of band energies and the set of line spectral frequencies to distinguish a voice from noise, (Li [0007]). However Li fails to teach a tone detector with this limitation. Gilbert teaches a tone detector that checks the transmission signal for DTMF tones, (Gilbert Col. 3 line 60 – Col. 4 line 4). Therefore, the combined teaching of Li and Gilbert would have rendered obvious a frequency spectrum calculator used as part of a tone detector.

"flatness evaluator", Li teaches parametric characteristics in the frequency spectrum and the zero cross rate where running averages of the background noise and

the detected signal in a current frame are found, (Li [0007]). By calculating a running average in the frequency spectrum, one acquires how flat a signal is. However Li fails to teach a tone detector with this limitation. Gilbert teaches a tone detector that checks the transmission signal for DTMF tones, (Gilbert Col. 3 line 60 – Col. 4 line 4). Therefore, the combined teaching of Li and Gilbert would have rendered obvious a flatness evaluator that calculates flatness of the frequency spectrum as part of a tone detector.

"tone signal discriminator", Li teaches a module that determines whether a signal is noise or a voice, (Li [0005]). "frequency spectrum with a predetermined threshold", Li teaches two thresholds that are used to maintain the distinction between noise and voice energies, (Li [0040]). Li teaches a "tone detection flag", where if the VAD (voice activity detector) detects a voice, encoding of the signal takes place, if not a discontinuous transmission takes place, (Li [0005]). However Li fails to teach a tone detector with this limitation. Gilbert teaches a tone detector that checks the transmission signal for DTMF tones, (Gilbert Col. 3 line 60 – Col. 4 line 4). Gilbert also teaches the tone detector creating a response dependant on whether a tone is detected, (Gilbert Col. 3 line 60 – Col. 4 line 4). Therefore, the combined teaching of Li and Gilbert would have rendered obvious a tone signal discriminator that detects whether a tone is present in respect to the flatness of a signal that is compared to a threshold.

"a decoder that produces a decoded data stream", Li teaches an input signal and detection of a voice, (Li [0005]). However Li fails to teach decoding operations. Gilbert

teaches the transmission of voice by digital means and voice encoders/decoders, (Gilbert Col. 1 line 15-21). Therefore, the combined teaching of Li and Gilbert would have rendered obvious a decoder used as part of a tone detector to detect a tone in an input signal and produce decoded data.

"signal output controller", Li teaches a VAD that generates output dependant on whether voice is found in an input signal, (Li [0005]). "outputs the decoded data stream as is when the tone detection flag is set", Li teaches that if the VAD detects a "1", the digital representation of the voice signal is encoded, (Li [0005]). "applies speech processing" before output if the tone detection flag is not set, Li teaches that if the VAD detects a "0", the background noise is encoded and transmitted. Speech processing occurs whether the voice signal is detected or not. However Li fails to teach a tone detector with this limitation. Gilbert teaches a tone detector that checks the transmission signal for DTMF tones, (Gilbert Col. 3 line 60 – Col. 4 line 4). Gilbert also teaches the tone detector creating a response dependant on whether a tone is detected, (Gilbert Col. 3 line 60 – Col. 4 line 4). Therefore, the combined teaching of Li and Gilbert would have rendered obvious a signal output controller dependant on the state of the flags from the tone detector.

Claim 19 has been analyzed and rejected with respect to claim 15. "echo canceller module", the limitations of (a) set forth in claim 15 are taught as an "output" in (b) of claim 19. An "output" is broad and is construed as the output taught by Li from the VAD (voice activity detector) prior to invoking of the speech encoder, (Li [0005]). However Li fails to teach these limitations applied to an echo canceller. Gilbert teaches

an echo canceller, (Gilbert Col. 3 line 60 – Col. 4 line 4). Therefore, the combined teaching of Li and Gilbert would have rendered obvious the limitations taught in claim 15 (a) and claim 18 (b) through the implementation of an echo canceller.

"echo canceller module" that identifies "states of the input and output", Li teaches the determination of whether there is a voice in an incoming signal, (Li [0005]). However Li fails to teach the state identification of input and output signals. Gilbert teaches the state determination from an echo canceller used in combination with a tone detector, (Gilbert Col. 3 line 60 – Col. 4 line 4). "Subtracts the pseudo echo signal from the input sound signal", Li fails to teach a voice/noise discriminator but fails to teach the operation of subtraction, (Li [0005]). Gilbert teaches the subtraction of an echo signal from a speech/echo signal, (Gilbert Col. 6 line 36-47). "echo canceling process updates the echo path characteristics", Gilbert teaches the use of feedback after the subtraction of the echo signal prior to the tone detector, (Gilbert fig. 2). Therefore, the combined teaching of Li and Gilbert would have rendered obvious an echo canceller that removes the echo from the input signal updating the echo characteristics of the signal.

Examiner's Note

The referenced citations made in the rejection(s) above are intended to exemplify areas in the prior art document(s) in which the examiner believed are the most relevant to the claimed subject matter. However, it is incumbent upon the applicant to analyze the prior art document(s) in its/their entirety since other areas of the document(s) may be relied upon at a later time to substantiate examiner's rationale of record. A prior art

reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. W.L. Gore & associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). However, "the prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed…." In re Fulton, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004).

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael C. Colucci whose telephone number is (571)272-1847. The examiner can normally be reached on 7:30 am - 5:00 pm , alt. Fridays. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vu Le can be reached on (571)-272-7332. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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